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EXAMINER

QIN, YIXING

ART UNIT	PAPER NUMBER
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2622

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/927,539

Applicant(s)

FUJIWARA, TAKAFUMI

Examiner

Yixing Qin

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 6 is rejected under 35 U.S.C. 101 because the following claim format is unacceptable and subject to a 101 rejection:

"A computer program for performing the steps of ..."

Such a claim is non-statutory because the terminology "computer program" alone has no set definition. The following claim formats are acceptable and not subject to a 101 rejection:

"A computer program embodied in a computer readable medium for performing the steps of ..."

"A computer readable medium storing a program for performing the steps of..."

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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I. Claims 1-5, 7, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al (U.S. Patent No. 5,768,481) in view of the applicant's admitted prior art in the background of the specification.

**1. Claims 1, 5 and 7**

**An image processing apparatus for compressing and storing image data, comprising:**

- **division means for dividing the image data into a pixel block, which is a group of a predetermined number of pixels;**
- Chan et al discloses in column 7, lines 30-31 that an image frame is partitioned into blocks.
- **generation means for compressing the data in the pixel block unit and sequentially generating packet data;**
- Although Chan et al discloses the compressing of image data (column 8, lines 45-48), they do not explicitly disclose the compression into a packet. However, the applicant's admission of the prior art in the background of the invention (this will be called "background" from hereon), on page 1, lines 14-18, that image data can be divided into packet data.
- **packet table storage means for storing, as a packet table, a storage address of packet data corresponding to each pixel block subjected to division by said division means; and**

- Again, Chan et al does not explicitly disclose the use of packets. However, the background discloses the use of a packet table in page 1, line 22.
- **storage control means for storing packet data of interest generated by said generation means and a storage address of the packet data of interest in the packet table when the packet data of interest is different from preceding packet data, whereas when the packet data of interest is equal to the preceding packet data, not storing the packet data of interest, but storing in the packet table a storage address of the preceding packet data as a storage address of the packet data of interest.**
- The Chan et al reference discloses in column 26, lines 1-3, that “two successive non-variant blocks can be encoded using a repeat flag, without having to encode the full information for the second and successive block.” (i.e. **preceding packet and packet of interest are equal, and packet of interest need not be stored**).
- Again, the applicant’s background on page 1, lines 14-18 and 21-23, discloses the storage of packets and addresses in a packet table. One would understand that if two packets were different, their data and addresses would both be stored.
- Both the Chan et al reference and the applicant’s background are in the art of image compression using the division of image data into blocks. This will serve as the motivation for the combination of these two references from hereon.
- Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use packets as a compression format. The motivation

would be to use a conventional format for the sake of compatibility.

## 2. Claim 2

The image processing apparatus according to claim 1, wherein

- the preceding packet data is a packet corresponding to a pixel block immediately preceding to the packet data of interest.
- Again, The Chan et al reference discloses in column 26, lines 1-3, that “two successive non-variant blocks can be encoded...” The **preceding packet** would be the first of the two blocks, the **packet of interest** is the second block. Again, packets and packet tables are disclosed by the applicant’s background.

## 3. Claim 3

The image processing apparatus according to claim 1, wherein

- the packet data stored by said storage control means and the packet table are stored as one file.
- Chan et al discloses in column 5, lines 6-9 that “...an entire frame of image data is only stored in the print system 100 after it has been compressed...” Again, packets and packet tables are disclosed by the applicant’s background.

## 4. Claim 4

The image processing apparatus according to claim 1, wherein

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- **the packet table includes a flag indicative of whether or not to refer to an address of another packet data as a storage destination of packet data corresponding to a pixel block of interest.**
- The Chan et al reference discloses in column 26, lines 1-3, that “two successive non-variant blocks can be encoded using a repeat flag, without having to encode the full information for the second and successive block.” Again, packets and packet tables are disclosed by the applicant’s background.

**5. Claims 12 and 13**

**A multi-function apparatus having a scanner controller for controlling a scanner unit which reads a document image, a printer controller for controlling a printer unit which prints an image on a print medium, and a system controller for controlling an entire system and having an image memory, all of which are connected through a bus, said scanner controller comprising:**

- **division means for dividing image data, read by the scanner unit, into a pixel block, which is a group of a predetermined number of pixels;**
- **generation means for compressing the data in the pixel block unit and sequentially generating packet data;**
- **packet table storage means for storing, as a packet table, a storage address of packet data corresponding to each pixel block subjected to division by said division means;**

- **storage control means for storing packet data of interest, generated by said generation means, in the image memory and storing a storage address of the packet data of interest in the packet table when the packet data of interest is different from preceding packet data, whereas when the packet data of interest is equal to the preceding packet data, not storing the packet data of interest, but storing in the packet table a storage address of the preceding packet data as a storage address of the packet data of interest; and**
- The above four limitations have been addressed in the rejection to claim 1 above.
- **transfer means for transferring the data, stored by said storage control means, to the system controller through the bus.**
- Chan et al discloses in column 6, lines 21-24 that compressed data can be transferred to the printer engine through a system bus 110. Also see Fig. 1, where the bus 110 connected various components.
- The motivation has been addressed in the rejection to claim 1 also.

II. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al (U.S. Patent No. 5,768,481) in view of Trout (U.S. Patent No. 6,301,394).

#### 6. Claim 8

**An image processing apparatus at least having compression means for compressing image data, packet generation means for packing the compressed**



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**image data in a form of a packet, a buffer for temporarily storing the packet, and comparison means for comparing the packet stored in the buffer with a packet generated by said packet generation means,**

- Again, Chan et al does not explicitly disclose the use of packets, but does disclose in column 8, lines 45-48 that the pixel blocks are compressed into words (i.e. there is a word generation means). However, the secondary reference, Trout, discloses in column 3, lines 26-29, the comparison of a received packet against the last received packet. This is done in what Trout calls a second data compression procedure (column 3, lines 20-21) – indicating that a first compression procedure occurred to get these packets.
- Chan et al discloses in column 8 lines 57-61 that the memory space (i.e. **buffer**) can store 32-bit words.
- **wherein when said comparison means finds that a compressed packet of interest is equal to compressed packet data stored in said buffer, a flag is set for indicating that data of the compressed packet of interest is equal to data in the buffer.**
- Again, the Chan et al reference discloses in column 26, lines 1-3, that “two successive non-variant blocks can be encoded using a repeat flag, without having to encode the full information for the second and successive block.”
- Both references are in the art of data compression for the sake of saving space. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the use of packets to represent compressed

data and the comparison of packets in Chan et al's invention. The motivation would be to enable further compression by not having to store again information that is the same (i.e. store a repeat flag instead of storing another word or packet with the same information as the preceding word or packet).

## 7. Claim 11

- **A memory writing apparatus for receiving the packet described in claim 8, and not storing the packet in a memory when a flag indicative of equality to image data of a preceding pixel block in the packet is set, but storing the packet in the memory when the flag is not set.**
- Again, the Chan et al reference discloses in column 26, lines 1-3, that "two successive non-variant blocks can be encoded using a repeat flag, without having to encode the full information for the second and successive block." (i.e. **no need to store the repeating data**).
- Chan et al further discloses in column 8, lines 61-65, that they used "words" to represent compressed data and that the data are "...stored back-to-back in memory..." One would understand that if not using the repeat flag as mentioned above, the "words" would, by default, be stored back-to-back in memory.
- Words are similar to packets in that they are both a string of 0s and 1s...also note that Trout and the applicant's background discloses the use of packets to represent compressed data.

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III. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al (U.S. Patent No. 5,768,481) in view of Trout (U.S. Patent No. 6,301,394) and further in view of the applicant's admitted prior art in the background of the specification.

**8. Claim 9**

**The image processing apparatus according to claim 8, wherein**

- **when a match is found as a result of comparing the packet generated by said packet generation means with packet stored in said buffer, data is extracted from a packet to be generated and a packet including only a packet header is generated.**
- Chan et al and Trout both disclose ways of distinguishing one pixel block from another, but does not explicitly disclose that only a header is generated for a packet that is the same as a previous packet. However, Chan et al discloses in column 26, lines 1-3, that "two successive non-variant blocks can be encoded using a repeat flag, without having to encode the full information for the second and successive block."
- The tertiary reference, the applicant's background, discloses on page 1, lines 14-21 that a header is commonly used to identify the length of a packet. One skilled in the art would understand that this knowledge of the length of the packet is important in the correct reading and writing of compressed data. Since Chan et al disclosed above that one would not need to encode the full information for the

second block , it would be obvious to just include the length (which is in the header) so that one would know how "far" to read and write.

- All three references are in the art of data compression for the sake of saving space. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to only to store a header for a repeated packet. The motivation would be to improve compression by only having to store a relatively small portion of the repeated packet ( i.e. the header).

IV. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al (U.S. Patent No. 5,768,481) in view of Trout (U.S. Patent No. 6,301,394) and further in view of Umemura (U.S. Patent No. 5,014,198).

#### 9. Claim 10

**The image processing apparatus according to claim 8, wherein**

- **in a case where a volume of the packet of interest is larger than a predetermined volume, the packet is not stored in said buffer and excluded from comparison.**
- Although the Chan et al and Trout references, together, disclose the ideas of packets and comparison, neither reference discloses the idea of using a predetermined volume in order to decide whether a packet is to be stored.
- The tertiary reference, Umemura, discloses in column 3, lines 44-46 that his invention has a "...discrimination circuit 15 [that discriminates] whether or not the

input block image data is the human body portion, the background portion, or the mixed portion." One can see the image in Figs. 4 and 5 of Umemura

- In the same column, on lines 56-59, Umemura explains that there is a predetermined threshold density value and a 90% or more occurrence of pixels in a block with a lower value makes the block a background block. In column 4, lines 18-26, Umemura explains that background blocks are not considered for further processing using DCT. This is conceptually analogous to what is being claimed since there is a step before further processing to determine if certain data is needed to be further processed (i.e. blocks with 90% or more pixels - i.e. **predetermined volume** - under a certain threshold are not further compressed and categorized as background information just like packets that are too large are not further compressed).
- All three references are in the art of data compression using techniques to improve the compression ratio. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to not consider certain data for compression using some predetermined value (i.e. threshold, volume, etc.) The motivation would be to save time in not processing data in which one would expect minimal chances of beneficial processing.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yixing Qin whose telephone number is (571)272-7381. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on (571)272-7402. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YQ

JOSEPH MANCUL  
PRIMARY EXAMINER